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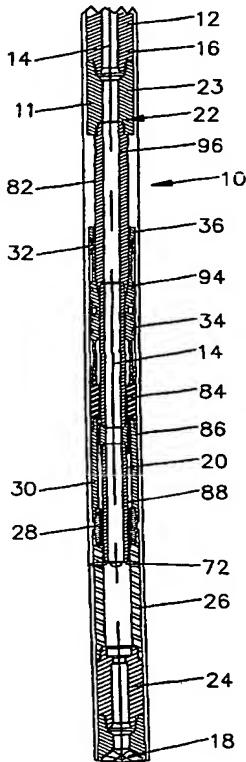
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[Continued on next page]

(54) Title: DOWNHOLE DRILL STRING HAVING A COLLAPSIBLE SUBASSEMBLY

(57) Abstract: A method and apparatus for allowing a downhole drill string to be stuck at one location and continue to rotate above the stuck section. The apparatus provides a method for collapsing the stuck subassembly by reducing its outside diameter. Simultaneous with the subassembly collapse, a jarring action is initiated from within the drill string to further loosen the stuck sections. At the same time drilling fluid inside the string is allowed to circulate outside the string through a circulation sub. The fluid is forced around the stuck subassembly further increasing the likelihood that the subassembly will be freed.



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## INTERNATIONAL SEARCH REPORT

I      national Application No  
PCT/US 03/21537

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7    E21B31/00    E21B31/03    E21B17/05    E21B17/10    E21B31/107

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 082 457 A (VAN BUREN MARKUS ANTONIUS ET AL) 4 July 2000 (2000-07-04) column 1, line 1 -column 2, line 28; figure 1 —	6-10
Y	US 4 960 173 A (COGNEVICH MICHAEL L ET AL) 2 October 1990 (1990-10-02) column 2, line 49 - line 61; figures 1,2 —	6-10
Y	US 3 804 186 A (SCHOEFFLER W) 16 April 1974 (1974-04-16) column 4, line 22 - line 40; figure 1 —	9
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		-/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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